1992
Executive Research Project
S46

Thinking -- You Can Learn To Do Better What You Think You Already Do Well

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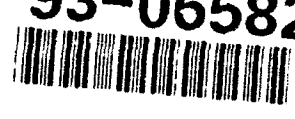

Unclassified
SECURITY CLASSIFICATION OF THIS PAGE

REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION Unclassified	1b RESTRICTIVE MARKINGS
2a. SECURITY CLASSIFICATION AUTHORITY N/A	3 DISTRIBUTION / AVAILABILITY OF REPORT Distribution Statement A: Approved for public release; distribution is unlimited.
2b. DECLASSIFICATION / DOWNGRADING SCHEDULE N/A	
4. PERFORMING ORGANIZATION REPORT NUMBER(S) NDU-ICAF-92- S 46	5. MONITORING ORGANIZATION REPORT NUMBER(S) Same
6a. NAME OF PERFORMING ORGANIZATION Industrial College of the Armed Forces 6b OFFICE SYMBOL (If applicable) ICAF-FAP	7a. NAME OF MONITORING ORGANIZATION National Defense University
6c. ADDRESS (City, State, and ZIP Code) Fort Lesley J. McNair Washington, D.C. 20319-6000	7b. ADDRESS (City, State, and ZIP Code) Fort Lesley J. McNair Washington, D.C. 20319-6000
8a. NAME OF FUNDING / SPONSORING ORGANIZATION 8b. OFFICE SYMBOL (If applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER
8c. ADDRESS (City, State, and ZIP Code)	10. SOURCE OF FUNDING NUMBERS PROGRAM ELEMENT NO. / PROJECT NO. / TASK NO. / WORK UNIT ACCESSION NO.
11. TITLE (Include Security Classification) Thinking - - Can Lincoln Help Bill? What You Think You Already Do Well	
12. PERSONAL AUTHOR(S) Richard F. Hobbs, Jr.	
13a. TYPE OF REPORT Research	13b. TIME COVERED FROM Aug 91 TO Apr 92
14. DATE OF REPORT (Year, Month, Day) April 92	15. PAGE COUNT 53
16. SUPPLEMENTARY NOTATION	

17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
FIELD	GROUP	SUB-GROUP	

19. ABSTRACT (Continue on reverse if necessary and identify by block number)

SEE ATTACHED

20. DISTRIBUTION / AVAILABILITY OF ABSTRACT ☒ UNCLASSIFIED/UNLIMITED ☐ SAME AS RPT. ☐ DTIC USERS	21. ABSTRACT SECURITY CLASSIFICATION Unclassified
22a. NAME OF RESPONSIBLE INDIVIDUAL Judy Clark	22b. TELEPHONE (Include Area Code) (202) 475-1889 22c. OFFICE SYMBOL ICAF-FAP

DD FORM 1473, 84 MAR 83 APR edition may be used until exhausted. All other editions are obsolete.

SECURITY CLASSIFICATION OF THIS PAGE
Unclassified

Abstract of

THINKING--YOU CAN LEARN TO DO BETTER
WHAT YOU THINK YOU ALREADY DO WELL

Thinking is a skill that can be learned and should be learned. Our traditional education system does not deliberately teach people how to think. It focuses on providing knowledge and measuring fixed ideas, not on providing students with an understanding of logic (vertical thinking) or creativity (lateral thinking). This paper explores these stages of thinking, as well as, the nature of thought and the various thirking styles exhibited by most people. The thrust of the paper is to show that we need to improve our thinking ability and that thinking is a skill we need to "exercise" in order to better cope with the complex problems we face in a our rapidly changing world. I therefore hope that by the end of this paper you will accept the idea that thinking is a skill you can learn to do better and teach to others.

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DISCLAIMER

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INDEX

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INTRODUCTION

The students of the Industrial College have been told repeatedly that, "We want you to think [while you're here]." We have taken several instruments to identify our learning style, adaptability, and behavioral characteristics--among others. Providing us with these self-assessment instruments is commendable and displays an appreciation for the importance of self-learning and self-development. But, knowing more about ourselves and the way we prefer to think does not help us to change the way we think.

Our ability to think is taken for granted. As Edward de Bono states, in his book de Bono's Thinking Course, "The biggest enemy of thinking is the feeling 'that our thinking is pretty good anyway and we do not have to do anything about it.'"[1] This assumption/belief lulls us into a false sense of security and gives us a bogus confidence in our thinking ability that we do not deserve. This confidence is at the root of the rivalries, parochialism, and conflicts that plague the military, the government, and societies in general. The only way to reduce the rivalries, parochialism, and conflicts that occur in our interpersonal relationships is to understand why they exist and how they can be overcome. The key to this understanding is in developing an appreciation of how and why we think the way we do; whereas, the key to overcoming these problems is to improve our ability to think--so that viable solutions can be implemented.

We need to come to the realization that we see reality through a mirror that partially transmits and partially reflects. We see things that are outside of us, but we see them bathed in "reflections" from our own minds.[2] "We see things not as they are but as we are."[3] It is an appreciation of this fact that should provide the motivation we need to improve our ability to think, because it is only by improving our understanding of thinking, and of how we can learn to control our thought, that we can develop effective solutions for dealing with the future without unconsciously and erroneously believing that tomorrow will be a reflection of today and yesterday.

I believe that H. Mumford Jones is quite correct when he states, "Ours is the age that is proud of machines that think and suspicious of men who try to."[4] Ours is also the age of action, and the ancestor of every action is thought.[5] As B.C. Forbes said, "To make headway, improve your head."[6] This requires learning how to think better.

The ways to improve your thinking are not difficult to learn, but they are difficult to explain and to use. It is beyond the scope of this paper to explain in detail the methods you can use to improve your thinking. Instead, my goal is limited to trying to convince you that you can learn to improve your thinking ability and that you need to do so. While I hope to wet your appetite for learning about how to improve your thinking ability, the real effort to actually learn the methods available is up to you.

This paper will require that you think about thinking, not as something difficult but as something different. Understanding something difficult is a matter of effort. But understanding something different requires not effort but a willingness to accept new ideas.[7] To help in developing this understanding. I have divided this paper into the following sections: (1) An Overview on Thinking; (2) The Nature of Thought; (3) The Negative Impact of Western Education On Our Ability To Think; (4) Logical/Vertical Thinking and Creative/Lateral Thinking--The Need For Skills In Both; (5) Styles of Thinking and Their Importance; and (6) Concluding Thoughts. I hope that by the end of this paper you will accept the idea that thinking is a skill you can learn and develop on your own--and teach to others.

AN OVERVIEW ON THINKING

"In human events, nothing just happens. Human beings make things happen, either by what we do or what we fail to do."[8] You and I are the causes of our consequences. Consequences are a product of action and action is a product of thought. Improving our thinking will help to ensure that our actions are appropriate to the situation and that the consequences of our actions will be those we expected. Improving our thinking first requires that we think differently than we have probably done in the past.

To appreciate why we think the way we do and why that method of thinking by itself is inadequate, we need to: (1) understand logical or "vertical thinking," (2) be aware that it is the predominate method of thinking in Western society, and (3) understand how it is perpetuated by our educational system. Logical/vertical thinking is not, in and of itself, conducive to creativity. Because it is a "yes" or "no" system (i.e., an idea is either absolutely right or absolutely wrong), it tends to reject new ideas. Most of our so called "reason," therefore, consists of finding reasons to go on believing as we already do.[9] To change our view of a problem--to arrive at a better solution--requires creativity and a change in our perspective on the problem being considered. Vertical thinking, by its very nature is inhibitive in these areas. Creative or "lateral" thinking is required.

Lateral thinking and vertical thinking are complementary. It is lateral thinking which enables us to generate new ideas and

new alternatives; it is vertical thinking which enables us to act on these new ideas and alternatives.

Action generally requires the cooperation of others. An appreciation of our style(s) of thinking, and those of others, is needed if we are to improve our ability to influence others to adopt our ideas. The various styles of thinking and why it is so important to appreciate how others think--if we are to ensure that our ideas are not rejected--is covered in separate section of this paper. If you are one of the fortunate few who have never presented a good idea only to have it rejected, you probably will not appreciate the importance of the need to sell your idea in a manner acceptable to the person who will judge it good or bad. However, if you have ever had a good idea rejected because you couldn't sell it, you will benefit from an understanding of how others think. With this understanding, you can present your ideas in a manner that will facilitate acceptance.

There is a saying that, "Like a parachute, your mind only functions when its open."[10] If you already believe you know how to think, this paper will do you no good, for, in the words of Henry David Thoreau, "It takes two to speak the truth--one to speak and another to hear."[11]

THE NATURE OF THOUGHT

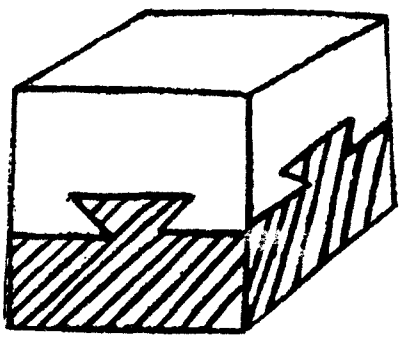
"...the brain is a tool of the mind, and behavior is an effect of the mind."--Stuart B. Litvik[12]

The brain can be considered a special channel through which information flows--where the information comes in as data, evidence, or appreciation of a situation, and goes out as action, choice, decision, reaction, problem solving, and so on.[13] The brain is a device for changing the nature of information and the process of change is called thinking.[14]

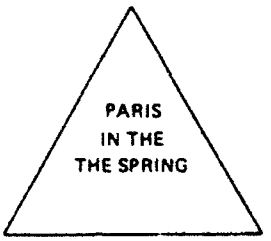
Thinking is the operating skill through which innate intelligence is put into action.[15] It is also the operating skill through which intelligence acts upon experience for a purpose.[16] Experience shapes perception.

Perception is the way we look at things. Processing in the mind is what we do with that perception.[17] In processing perceptions, mental patterns are formed.

A mental pattern is: (1) "Where any state is preferentially followed by another state," and (2) "...where items of information hang together and so give an expectancy."[18] While defining a pattern is difficult, illustrating one is not. Look at the drawing below. If you were a carpenter, how would you construct it?[19]



Give up? Appendix A shows how it can be done. If you didn't figure it out, it was probably because you were trapped in a pattern that expected something different. Take a moment to glance at the triangle below before reading any further in this paragraph.[20]



Look carefully. Did you overlook the repeated word? If you did, you were again trapped by a pattern.

Your brain, in many cases, converts incoming data into what it "should" be, sometimes at the expense of the actual meaning. These examples illustrate two characteristics of patterns: expectation and continuity.

Continuity is the basic feature of a pattern system like the mind.[21] Once a pattern is formed, the mind no longer has to analyze or sort information.[22] All that is required is enough information to trigger the pattern. The mind then follows along the pattern automatically, in much the same way a driver follows a familiar road. In addition to being repeatable and giving rise to expectations, patterns are also recognizable.

Patterns have many advantages. Perhaps chief among these is that they enable us to react quickly to fragments of information without having to establish complete cause and effect

relationships. It allows us to anticipate what will follow. In this anticipation, however, also lies the danger of patterns. Once a pattern emerges, the tendency is for that pattern to continue and to become even more firmly established.[23] A patterning system functions on the assumption that things in the future will continue to be as they have been in the past![24] In addition, anything (data, information, perceptions, etc.) remotely similar to an established pattern will be treated just as if it were that pattern, unless there are competing patterns.[25] Patterns, sometimes called maps, cause a dilemma. the dilemma is that a person poorly equipped with a repertoire of patterns will be unable to look at data in a meaningful way, whereas a person well equipped with patterns tends to be unable to look at data in a new way.[26]

Was it our belief in our technical superiority and the former Soviet Union's technical inferiority--based upon established mental patterns--that lead us to smirk at the apparent backwardness of their use of vacuum tubes rather than integrated or printed circuits for many avionics systems in the construction of the MiG-25 "Foxbat," when, in fact, these tubes were in systems on the periphery of the aircraft to enable it to better withstand the electromagnetic pulse (EMP) effect of a nuclear explosion.[27] As Edward Teller said, "...the 'Foxbat' was...designed by someone as crazy as a fox."[28] We failed to recognize the actual sophistication of the use of vacuum tubes because we were caught up in a pattern of belief that vacuum

tubes were inferior and a belief in our own technical superiority. Similar failures to properly interpret data and to change our thinking patterns accordingly could be fatal. It has been said that, "You prepare your own way by the nature of your own thought patterns."[29]

It would behoove us to develop the thinking skills necessary to recognize and update our thinking patterns, so they remain an actual reflection of reality. It is essential to recognize that a thought pattern is only one of several alternative arrangements that could have formed a mental pattern and, therefore, that mental patterns can be restructured or changed.[30] It is also essential to recognize that the current arrangement of information in a mental pattern can never make the best use of available information and, therefore, that it is necessary to restructure the patterns in order to bring the arrangement up-to-date.[31] Our progress, as well as our military proficiency, depends upon being able to do this.

Progress is not a matter of changing wrong or inadequate ideas but of changing ideas which have been perfectly right but are now obsolete. Any idea, no matter how right, may need changing. If this is so, then any idea, no matter how right, should be re-examined from time to time. Unfortunately, our education system does not equip us well for this task.

THE NEGATIVE IMPACT OF WESTERN EDUCATION ON OUR ABILITY TO THINK

Orthodox Western education usually does nothing to encourage lateral thinking habits and actually inhibits lateral thinking/creativity.[32] Western thinking habits are dominated by negatives: clash, criticism, and dialectics.[33] Education usually works on the matching system. If a student's output matches what is expected, it is marked right; if it does not, it is marked wrong. There is no way of distinguishing what is wrong in and of itself from what is merely different. We have been trained to believe that the absence of logic is chaos, confusion, and even madness, but it is not.[34] We have been brainwashed over the ages to believe that logic is the only way of handling ideas in order to obtain a useful result.[35] Unfortunately, in perfecting our ability to handle ideas, we have inhibited the creativity which is need to develop the ideas to be handled and, therefore, lost opportunities to obtain the results we might have achieved.

Modern Western education, which stresses logic, seems to squelch creativity. Tests show that a child's creativity plummets 90 per cent between the ages of 5 and 7.[36] By the age of 40, most adults are about 2 per cent as creative as they were at 5.[37] Some experts even believe that graduate school may be detrimental in some fields because it perpetuates entrenched thinking.[38] It is staggering to contemplate the potential gains that could have been made were this not the case. The need to

make such gains, and their importance to our competitiveness and to our ability to improve the quality of the American work force, lead to the following recommendation from a staff report to a Congressional Subcommittee on Health and Education:

> Achievement in education needs to be redefined to extend beyond basic reading, writing, and mathematics skills to include problem solving and abstract reasoning, the so-called "higher order skills."[39]

Unfortunately, our whole thinking system has been designed to establish and prove the truth of already existing ideas. We have never developed tools for smoothly changing ideas, because it has always seemed inconceivable that the ideas we hold at the moment should ever be changed.[40] The ideas we hold at the moment must be right--if they weren't why would we hold them? And right ideas cannot need changing--right? This is one of the traps of logical thinking. It is also one of the major reasons for conflict and resistance to change.

In effect, what passes for education in our institutions amounts to the transference of various abstract maps (patterns) of world processes from a book to the teacher's notes to the student's notes without passing through the minds of either.[41] While this may at first sound ludicrous, you need only to reflect on your own civilian and military educational experiences to recognize the validity of this statement. Were you expected to think about what you were being taught or just expected to memorize it for later rote recall? How many classes in logic or creative thinking did you take in high school? In college? We seldom teach students how to think; we primarily teach them what

to think. With the emphasis of our education system on objective measures of performance (e.g., Scholastic Aptitude Tests), we seem to be more concerned with the answers students give than on how they produce them. Scholarship is too often the triumph of form over content.

The trouble with present day education is that is covers the ground (facts and figures) without cultivating the soil (reasoning and thinking). Thinking skills will not improve by themselves, or in the course of a general improvement in education.[42] You have only to consider the thinking skills of some of the "best" educated people you know to know that education does not yet pay enough direct attention to thinking skills. In other words, being "smart" and being "filled" with facts and figures is not enough; you must be able evaluate those facts and figures and relate them in a constructive manner to anticipate and solve problems.

Another concern with our present education system, with its emphasis on logic, is the smugness that follows perfect logic and excludes the search for new ideas and better approaches. Another danger is that it leads us to only tackle that part of a situation that can be tackled with precision and to ignore the rest as if it did not exist. When we are primarily using logic in a pattern oriented system such as that in the brain, ignoring reality is not uncommon. Could this be one of the reasons so many Program Managers--and others in situations of uncertainty--fail to meet their cost, schedule, and performance objectives?

Do they fail because of their innate incompetence or because our education system failed to provide them with the tools they need to think about reality holistically and creatively? My experience suggests that the latter is true--that perfectly capable people fail because they are limited by their thinking skills. They don't lack the capability to think effectively; they lack the training that would enable them to do so.

Our Western education system does not provide them with training in creative/lateral thinking. Consequently, their ability to think effectively is, by training, limited. By its very nature, our educational system, with its emphasis on logic, is designed to look backwards and preserve the past, not to look forward and create the future.[43] Education is not really concerned with progress; its purpose is to make widely available knowledge that seems to be useful.[44] This, in and of itself, has value, but it is only a small part of thinking.

If we are to succeed in a severely declining budget environment, we will have to develop solutions to the problems of weapons development, force structure, strategy, tactics, etc., that are both creative and logically sound. Consequently, improving our ability to think creatively and logically is not a nicety but a necessity--the development of which should not be left to chance or to our traditional educational system.

LOGICAL/VERTICAL THINKING AND CREATIVE/VERTICAL THINKING--THE NEED FOR SKILLS IN BOTH

There are two stages of thinking. The first stage is the perceptual patterning stage, which is concerned with the way of looking at things and the choosing of concepts.[45] The second stage is concerned with the processing of these concepts. The first stage of thinking is primarily concerned with creativity/lateral thinking; the second with logical/vertical thinking. With lateral thinking you change concepts and ideas; with vertical thinking you refine and elaborate established concepts.[46]

Vertical/logical/traditional Western thinking is important to our being able to act on ideas. Its purpose is to choose from the alternatives available--to reach conclusions. Because it is important to our ability to reach conclusions and to make sound decisions, logic is a subject which should be taught/learned as part of any endeavor to improve our thinking skills.

To be effective as a logical thinker requires an understanding of the five major concepts of logic: logical propositions (deductive and inductive processes), premises, arguments, inferences, and conclusions. Understanding these concepts will increase your skill in using logical reasoning more effectively, improve your problem solving ability, and prevent you from being confused or mislead by the reasoning processes other people try to use with you and on you. Explaining these concepts is beyond the scope of this paper; however, the diagram

in Appendix B should make it obvious that logical errors come in many forms. Even more dangerous than the logical errors that can occur in vertical thinking is the nature of the logical thinking system itself.

"Yes" and "No" are the basic tools of logical thinking.[47] They works in a simple and direct manner. We look at an idea and if it does not fit our experiences we use "no" to throw out that idea. "No" indicates a mismatch between the idea and our experience and, therefore, serves to preserve ideas that have been established by experience.[48] The YES/NO system amplifies small differences, because it works only with extremes.[49] The manifestation of this in our society and in our interpersonal, interservice, intraservice, and intraagency relationships leads to frustration, inefficiency and conflict. For example, in our democracy, voting is on the YES/NO basis; therefore, people in opposing parties have to take opposite attitudes in order to polarize the voters' choices. Since few truths--particularly in politics--are absolute, such polarization hampers rather than facilitates the development and implementation of effective solutions.

The YES/NO system cannot deal with vagueness, uncertainty, and insecurity, because you cannot make a definite judgement about something that is not itself definite."[50] This is why people, who work within the YES/NO system, feel so lost, since so much of modern life is uncertain and since the rate of change is so fast it prevents tomorrow from being a repetition of today.

In the YES/NO system, if you are right, the person who holds a view opposite of yours must be wrong. It, therefore, becomes a duty to point out how right you are and how wrong the other person is. Likewise, he sees his duty as requiring him to do the same to you. There is nothing in the YES/NO system to indicate that both of you may be right but simply starting from different basic ideas or different ways of looking at things.[51]

With the YES/NO system, change can come about only if the current idea is rejected.[52] An idea must definitely be shown to be wrong before there can be any question of changing it or even considering the need to change it.[53] Change can be achieved only by rejecting the current idea; therefore, any new idea must take the form of an attack on an old idea.[54] The clash and conflict that results is not conducive to smooth and evolutionary change. In the military, it can result in interservice rivalries and failures such as the tragedy at Desert One during the Iranian hostage rescue attempt. In the latter case, each service had equipped and trained itself for independent operations. When a joint effort, such as the Iran hostage rescue mission, required the integration of operational capabilities; the services were forced to put together an adhoc organization that was not equipped or trained to operate as a cohesive unit capable of responding effectively to the unexpected.

Another fault with the YES/NO system is that it requires certainty that we are right before we can act.[55] When we make a decision, we have to know that the alternative we choose is

absolutely right or we will have doubts.[56] These doubts tend to retard us and hold us back. What usually happens is that to overcome this doubt we create a false certainty, which gives rise to a lot of trouble later when we do realize how false it was.[57] It may very well be that it was false certainty such as this--the certainty that somehow we would generate lift when we needed it--that has led us to ignore our requirement for strategic sealift for so long. Desert Shield/Desert Storm clearly demonstrated that there is an imbalance between the ability to apply forces in a conflict and the sealift required to sustain them. We need to learn better ways to overcome YES/NO thinking, prior to a Desert One tragedy or some sort of interpersonal or international conflict requiring us to change.

Creative/lateral (stage 1) thinking can help to facilitate change without the need to reject a previously held idea to do so. Lateral thinking encourages restructuring, rather than rejection, of old ideas. This restructuring is unlikely to occur where vertical thinking predominates. The trouble with "natural" restructuring in a vertical thinking system is threefold:

1. The new information which should cause restructuring can often be distorted and fit into the old pattern of thinking.

2. If the new information can be viewed only through the old pattern, only those parts of it which fit the old pattern will be accepted.

3. Unless the new information is abundant or powerful, it will simply be ignored.[58]

What this amounts to is that the "natural" restructuring of a pattern to bring it up-to-date always lags behind the possible restructuring that could occur based upon the information available.[59] An idea, therefore, will change of its own accord long after it could have been changed.

Lateral thinking is a way of using information to escape from old ideas and to generate new ones. Lateral thinking is the "neutral label" used to describe the process of changing from one way of looking at things to another.[60] Lateral thinking techniques encourage creativity. Creativity is a matter of trying to get at what has been left out of the original way of looking at a situation.[61] Creativity and lateral thinking bring about a change in direction; the purpose of change is to provide a new direction. There are three basic principles of creativity:

1. Overcoming the NO barrier so that ideas can be used as stepping stones to other ideas.

2. Opening yourself up to influences which have no connection with what you are doing.

3. Developing the willingness to look again at ideas which seem perfectly right and absolute.[62]

Lateral thinking, and the techniques used to encourage it, enable us to look at a situation in new and different ways. This ability is vital to being able to solve small problems before they become big ones and to being able to make decisions with confidence. The tools of lateral thinking allow us to break the

self-imposed bonds which imprison our creativity and stifle our thinking. It is important to realize that when we look at a situation only from within our established way of looking at it, no amount of will power is going to take us to a new way of looking at it.[63] We draw a boundary and work within that boundary; therefore, our answer will also lie within that boundary. We simply cannot look at something in a new way by looking at it harder the old way.[64]

The number of methods/tools that have been described to encourage lateral thinking are numerous and varied. One, called PMI (plus, minus, interesting), requires that you find positive, negative, and interesting points about an idea.[65] Other, such as, FOW (find other ways), CAF (consider all factors), and C&S (consequences and sequel)--to name but a few--are easy and effective.[66] Experiments have shown that both children and adults are more receptive to change, more creative, and more tolerant of the ideas of others after learning how to use lateral thinking techniques.[67]

Lateral thinking may seem like a luxury to be added to our other thinking tools, if we have the time. Actually, lateral thinking is not something that should be added to our ordinary thinking procedures but something that should come <u>before</u> them. Lateral thinking, when used, operates primarily in the first stage of thinking--in the perceptual patterning stage, which is concerned with the way of looking at things and the choosing of concepts. Logic, or vertical thinking, is concerned with the

processing of these concepts. Lateral thinking develops new ideas and new approaches to problems.

Once these ideas or approaches have been developed, they can be judged in the usual way. Vertical thinking is used to evaluate the approaches developed so that action can be taken. It stands to reason that the broader the conceptual base and breadth of understanding developed in the first stage of thinking the better will be the decisions arrived at in the second stage. Lateral thinking facilitates the recognition of the need to change prior to a crisis or conflict developing that requires change.

Lateral thinking techniques are easy to learn and they are effective; however, the appreciation of their importance as a part of your thinking and the effort to learn them is up to you.

STYLES OF THINKING AND THEIR IMPORTANCE

Once you have begun to deliberately practice and integrate logical/vertical and creative/lateral thinking, you will be able arrive at conclusions and solutions that, at least to you, appear intuitively obvious. Because they are based on sound thinking and are intuitively obvious to you, does not mean they will be intuitively obvious to others.

We have all, at some time in our careers, experienced the frustration of knowing that we had "the solution" to a problem but found that we were unable to get our peers or superiors to accept it. It could be that by failing to recognize the thinking style, or styles, of those we were trying to influence we failed to "sell" our solution in a manner which would facilitate its acceptance. Consequently, effective thinking alone is not enough. We must also be able to recognize how others think, so we can present our thoughts in a manner that they can accept and use within their frame of reference.

Identifying these "frames of reference" or thinking style(s) in yourself and others is not difficult, and there are a number of benefits to be derived from learning them:

1. Once you know your own style, or styles, of thinking and those of others--and can recognize the differences--you will have a springboard toward becoming a more adaptable and versatile problem solver.

2. You will be able to identify your own blind spots. You will be able to recognize the errors into which your

preferred style of thinking is likely to lead you, and the kinds of situations in which they occur. Knowing this, you can learn to compensate for your blind spots and to avoid errors more frequently than you probably do now.

4. You will learn a number of practical and accessible methods of augmenting and expanding your style of thinking.

5. You will learn specific methods of influencing and communicating with others in a more effective way.[68]

Allen F. Harrison and Robert M. Bramson, in their book The Art of Thinking, identify five styles of thinking. The five styles are labeled to characterize the primary trait associated with a particular thinking style or inquiry mode. They are: Realist, Analyst, Idealist, Synthesist, and Pragmatist. The following is a brief description of the influencing techniques most commonly used by each:[69]

Realist: Realists approach others in a straightforward, no-nonsense way. They make statements such as: "Here are the facts." and "This is my opinion." With their strong desire for factual agreement and consensus, Realists are likely to be relatively assertive about seeking these by saying such things as, "We can all agree about the realities of the situation." One of their most powerful techniques for influencing is based on their incisiveness and immediacy. "Here is what's happening, and here is what we ought to do about it." The Realist's favorite technique is to try to mobilize people around objective agreement in order to move toward concrete corrective action.

Analysts: Analysts influence others through logic, careful explanation, and the use of data that support their arguments. They make statements such as: "It is only logical." and "It stands to reason." Rather than being aggressive or emotionally persuasive, Analysts assume that others are--or should be--swayed by the convincing logic and rationality of what they have to say. They present themselves as eminently sensible, reasonable people, and have expectations that others will be more or less the same.

Pragmatists: Pragmatists exert influence simply by being enthusiastic and eager. They will try to motivate others with their relative quickness and playfulness. They make statement along the lines of: "Say, I'll buy that." and "What do you think of this bright idea?" Being adaptable and given to tactical thinking, Pragmatist influencing behavior is likely to be more flexible than that of other styles. Pragmatists will look for ways to tap into the motivations of others by experimenting with approaches that are likely to work, considering the immediate situation of the other person. Tom Sawyer's influencing of his friends to paint his aunt's board fence comes to mind as an example.

Idealists: Idealists influence others by appealing to such things as broad goals and high standards. They are given to a search for aids to agreement by making statements such as: "Don't you think?" and "It seems to me." and "Can we all agree on this?" They are listeners, and head nodders, and they rely on

receptivity as a means of bringing people to agreement on the proper view of things.

Synthesists: Synthesists do less than anyone else to influence others, partly because they understand how hard it is for true agreement to be reached and partly because they accept the "reality" that, in fact, several realities may exist. Synthesists often attempt to overwhelm the other person with their profundity. "May I suggest that we distinguish between..." they will say, or "But there's yet another side of the picture." Provided they can find others who are willing to let them, Synthesists will try to influence through debate, pointed arguments, or the kind of structured exchange of wit--leaping back and forth between logic and absurdity--that befits their dialectical approach.

It is important for us to recognize that our influencing techniques are styled largely for gaining agreement with, and rewards from, people who are much like ourselves.[70] We base our understanding of others and their motivations on what we think we know of ourselves and our motivations. We then decide that our way is both the "right" way and the "normal" way. All of us, to one extent or another, tend to fall into the trap of assuming that "everyone is like me." The hard reality is that people really are different, and what influences one may not influence another. The following are two rules of thumb to keep in mind when you are trying to influence someone else:

1. The methods and techniques that you customarily use

to influence others work best (or work only) with people like yourself--people who share similar values, motivations, and styles of thinking. If you want to be effective in influencing people who are different from yourself, you must learn to apply the techniques that are appropriate for them.[71]

2. If you want to be truly effective in influencing people who are different from yourself, you must learn something about their motivations, values, and styles of thinking.[72] You can do that by observing them and matching their behavior to the descriptions given above. To make that easier, Appendix C contains a chart which shows how the various thinking styles are characterized and the strengths and liabilities of each. These categorizations, as they are demonstrated in humans, are seldom, if ever, pure. In addition, Appendix D contains a chart of behavioral clues to styles of thinking in others. Using Appendix C and D, in combination, will enable you to develop strategies for winning acceptance of your ideas.

In working toward winning acceptance, it is important to recognize that you, as well as those you deal with, can have more than one highly developed thinking style. Allen F. Harrison and Robert M. Bramson, in their book The Art of Thinking, provide what they call the "i„Q" test, which can be used to identify your relative preference for each style of thinking. They also describe the characteristics of the various combinations of thinking styles and ways to improve your thinking skills for each style. Improving your thinking skill, combined with the ability

to recognize the preferred thinking styles of others, will enable you to make better contact with others in order to get a better hearing for your own views and to avoid rubbing people the wrong way. Once you learn the characteristics of the various styles of thinking, and combination of styles, the charts contained in Appendix C and D can be a "shorthand" reference that will aid you in selling your ideas and in your interpersonal relationships with others. They will enabling you to express your ideas in terms compatible with the manner in which the person you are trying to influence would express your idea if it was his or hers to begin with. Thus, by presenting your idea in a manner in which the person you are trying to influence can be immediately comfortable reexpressing it himself/herself, you not only facilitate his/her acceptance of the idea but also his/her ability to act on it. Consequently, you will increase both your effectiveness and theirs.

CONCLUDING THOUGHTS

Thinking is something we all do; therefore, we fail to recognize that we can learn to do it better. Implicit in traditional education is the notion that thinking is simply intelligence in action, just as traffic is cars in motion. The danger of this fallacy lies in believing that if you have intelligence nothing needs to be done about your thinking, or, if you are of more humble intelligence that nothing can be done. Either way, the result is that little is done to directly develop the skill of thinking.

The fact that thinking is a learnable skill--not a gift--and that it has been neglected by traditional education has undoubtedly resulted in a tragic waste of many brilliant minds. Unless we take the time to improve our thinking skills and begin to teach and develop thinking as a skill, we will continue to perpetuate this waste.

The dogmas that may have served us well in the past are inadequate in the stormy present. Let the historians treasure the out-of-date knowledge of the past--it's their business. It's our business to have the most up-to-date mental patterns/maps possible to guide us. Since reality is constantly washing its face, we must learn to occasionally scrub our mental maps. We must build our military on factual perception and not on historical faith by improving our ability to think.

We need to develop our lateral thinking ability if we are to increase our assurance that we have identified all available

alternatives and options before we use our logic to arrive at a decision. The thinking system that we have as a product of traditional education is inadequate by itself--with its orientation for retaining old ideas and rejecting new ones--for coping with the present day demands of a fast paced world. We are hung-up on inappropriate concepts of success and failure. Because something was successful in the past, and is in existence today, doesn't mean that it will be successful tomorrow. We need to learn to use lateral thinking, because its focus on restructuring old patterns of thought and creating new ideas and concepts can more rapidly lead to progress and development than can the more predominate vertical thinking system. The thrust of lateral thinking is to relate what is happening to what could be happening--to maximize potential.

Logic is the commonly misunderstood foundation of vertical thinking. By learning to understand it better, we can use it more effectively to select and act upon the ideas generated by the lateral thinking process. Learning how to use it, as well as how to recognize when it is being misused, will help to ensure that the actions we take and the manner in which we take them are appropriate for the situation in which they are used.

We will be better able to ensure that the outcomes we desire are achieved if we understand how others think, as well as, how we think. Learning our style(s) of thinking and the style(s) of others will improve our ability to successfully communicate our desires. In an era of bureaucratic red tape, funding shortfalls,

and increasing technical sophistication, the ability to obtain the cooperation of others is often the key to success.

Hopefully, this paper has convinced you that thinking is a learnable skill. Among the many benefits of learning to think more effectively, perhaps the most important is that you will be more effective. All it takes is a willingness to expend the effort to learn and practice something that will be personally and professionally beneficial to you and those you lead.

FOOTNOTES

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2. Kenneth S. Keyes, How to Develop Your Thinking Ability (New York: McGraw-Hill, 1979), p. 79.

3. Edward L. Kramer, The Negative Power of Positive Thinking (New York: McGraw-Hill, 1979), p. 85.

4. Karl Albrecht, Brain Power: Learn to Improve Your Thinking Skills (Englewood Cliffs: Prentice-Hall, Inc., 1980), p. 2.

5. George H. Bickerstaff, So Well Expressed (Salt Lake City: Bookcraft, Inc., 1964), p. 64.

6. Albrecht, p. 212.

7. Albrecht, p. 254.

8. Vernon Howard, Secrets of Mental Magic: How to Use Your Full Power of Mind (Englewood Cliffs: Prentice-Hall, Inc., 1974), p. 75.

9. J. H. Robinson, as quoted by Albrecht, p. 107.

10. Vern McLellan, Quips, Quotes, and Quests (Eugene: Harvest House Publishers, 1982), p. 85.

11. Robert Byrne, The 637 Best Things Anybody Ever Said (New York: Ballantine Books, 1982), #423.

12. Stuart B. Litvik, Use Your Head (Englewood Cliffs: Prentice-Hall, Inc. 1982), p. 136.

13. Edward de Bono, Lateral Thinking for Management (New York: Penquin Books, 1971), p. 43.

14. Ibid.

15. Edward de Bono, Teaching Thinking (New York: Penguin Books, 1978), p. 46.

16. de Bono, de Bono's Thinking Course, p. 50.

17. Ibid., p. 41.

18. de Bono, Lateral Thinking for Management, pp. 17-19.

19. de Bono, de Bono's Thinking Course, p. 50.

20. Albrecht, p. 137.

21. Edward de Bono, PO: Beyond Yes & No (New York: Penguin Books, 1972), p. 115.

22. de Bono, de Bono's Thinking Course, p. 46.

23. de Bono, Lateral Thinking for Management, p. 27.

24. de Bono, Lateral Thinking for Management, p. 27.

25. de Bono, de Bono's Thinkin' Course, p. 46.

26. de Bono, Lateral Thinking for Management, p. 24.

27. Richard A. Guida, "Nuclear Survivability," Proceedings, December 1985, p. 120.

28. Ibid.

29. Kenneth Wydro, Thinking on Your Feet (Englewood Cliffs: Prentice-Hall, Inc., 1981), p. 23.

30. de Bono, Lateral Thinking for Management, p. 39.

31. Ibid.

32. Edward de Bono, New Think (New York: Avon Books, 1967), p. 78.

33. de Bono, de Bono's Thinking Course, p. 51.

34. de Bono, Po: Beyond Yes & No, p. 25.

35. de Bono, Po: Beyond Yes & No, p. 25.

36. Emily T. Smith, "Are Your Creative?," Business Week, 30 September 1985, p. 81.

37. Ibid.

38. Ibid.

39. "The Education Deficit," A Staff Report Summarizing the Hearings on "Competitiveness and the Quality of the American Work Force," prepared for the use of the Subcommittee on Education and Health of the Joint Economic Committee Congress of the United States, December 12, 1988 (Washington: U.S. Government Printing Office, 1989), p. 44.

40. de Bono, Po: Beyond Yes & No, p. 35.

41. de Bono, New Think, p. 125.

42. de Bono, Teaching Thinking, p. 259.

43. de Bono, Po: Beyond Yes & No, p. 16.

44. de Bono, New Think, p. 45.

45. de Bono, Lateral Thinking for Management, p. 157.

46. Litvik, p. 64.

47. de Bono, Po: Beyond Yes & No, p. 29.

48. Ibid., pp. 29-30.

49. Ibid., pp. 30-31.

50. Ibid., p. 128.

51. Ibid., p. 126.

52. Ibid., p. 35.

53. Ibid.

54. Ibid.

55. Ibid., p. 128.

56. Ibid.

57. Ibid.

58. de Bono, Lateral Thinking for Management, p. 41.

59. Ibid.

60. de Bono, Teaching Thinking, p. 9.

61. de Bono, Lateral Thinking for Management, p. 184.

62. de Bono, Po: Beyond Yes & No, pp. 98-114.

63. Ibid., p. 100.

64. Ibid., p. 106.

65. Edward de Bono, Teaching Thinking, pp. 124-125.

66. Ibid., pp. 50 and 134.

67. Edward de Bono, Po: Beyond Yes & No, pp. 235-257.

68. Allen Harrison and Robert M. Bramson, The Art of Thinking (New York: Berkley Books, 1982), p. 3-4.

69. Ibid., pp. 102-103.

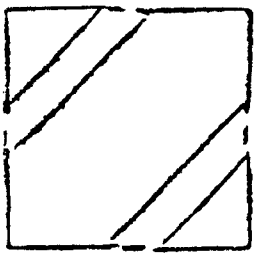
70. Ibid., p. 103.

71. Ibid., p. 106.

72. Ibid.

APPENDIX A

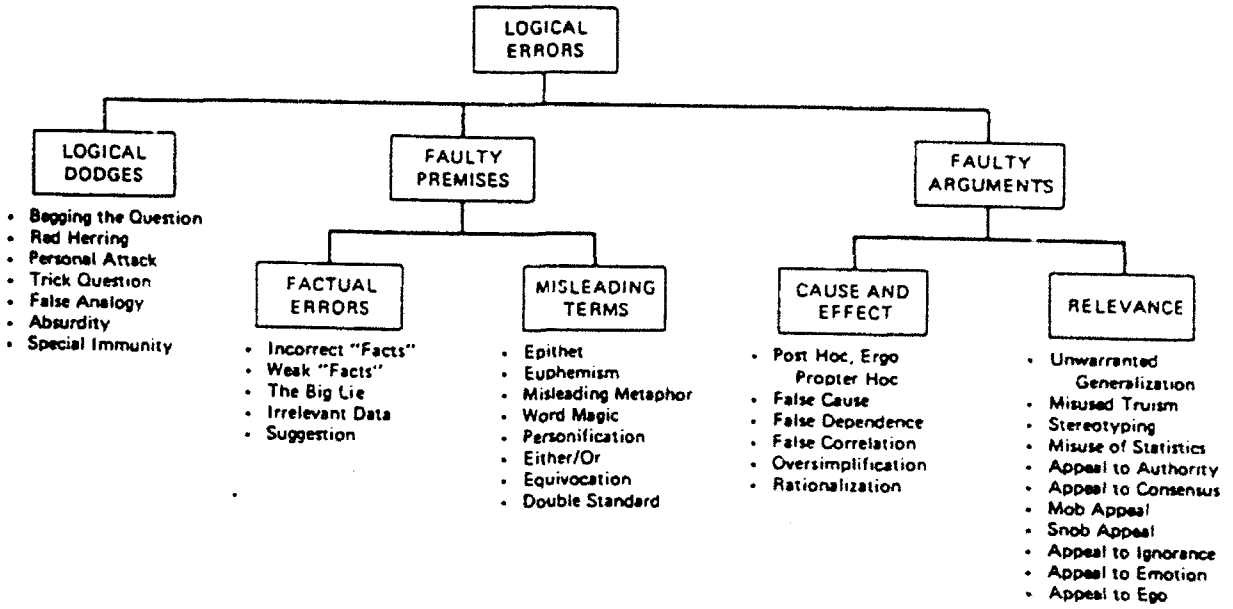
CARPENTER'S SOLUTION[1]



[1] Karl Albrecht, Brain Power: Learn to Improve Your Thinking Skills (Englewood Cliffs: Prentice-Hall, Inc., 1980), p. 137.

APPENDIX B

LOGIC ERRORS DIAGRAM[1]



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[1] Karl Albrecht, Brain Power: Learn to Improve Your Thinking Skills (Englewood Cliffs: Prentice-Hall, Inc., 1980), p. 169.

APPENDIX C

THINKING STYLES CHART[1]

Orientation	I SYNTHESIST	II IDEALIST	III PRAGMATIST	IV ANALYST	V REALIST
Characterized by:	Integrative view Sees likeness in apparent unlikes Seeks conflict & synthesis Interested in change Speculative Data meaningless w/o interpretation	Assimilative or holistic view Broad range of views welcomed Seeks ideal solutions Interested in values Receptive Data & theory of equal value	Eclectic view "Whatever works" Seeks shortest route to payoff Interested in innovation Adaptive Any data or theory that gets us there	Formal logic & deduction Seeks "one best way" Seeks models & formulas Interested in "scientific" solutions Prescriptive Theory and method over data	Empirical view & induction Relies on "facts" & expert opinion Seeks solutions that meet current needs Interested in concrete results Corrective Data over theory
Strengths:	Focus on underlying assumptions Points out abstract conceptual aspects Good at preventing over-agreement Best in controversial, conflict-laden situations Provides debate & creativity	Focus on process, relationships Points out values & aspirations Good at articulating goals Best in unstructured, value-laden situations Provides broad view, goals & standards	Focus on payoff Points out tactics & strategies Good at identifying impacts Best in complex, incremental situations Provides experiment & innovation	Focus on method & plan Points out data & details Good at model-building & planning Best in structured, calculatable situations Provides stability & structure	Focus on facts & results Points out realities & resources Good at simplifying, "cutting through" Best in well-defined, objective situations Provides drive & momentum
Liabilities:	May screen out agreement May seek conflict unnecessarily May try too hard for change & newness May theorize excessively Can appear uncommitted	May screen out "hard" data May delay from too many choices May try too hard for "perfect" solutions May overlook details Can appear overly sentimental	May screen out long-range aspects May rush too quickly to payoff May try too hard for expediency May rely too much on what "sells" Can appear over-compromising	May screen out values & subjectives May over-plan, over-analyze May try too hard for predictability May be inflexible, overly cautious Can appear tunnel-visioned	May screen out disagreement May rush to over-simplified solutions May try too hard for consensus & immediate response May over-emphasize perceived "facts" Can appear too results-oriented

[1] Allen Harrison and Robert M. Bramson, The Art of Thinking (New York: Berkley Books, 1982), pp. 196-197.

APPENDIX D

BEHAVIORAL CLUES TO STYLES OF THINKING[1]

WHAT TO LOOK AND LISTEN FOR	SYNTHESIST	IDEALIST	PRAGMATIST	ANALYST	REALIST
Apt to appear:	Challenging, skeptical, amused; or may appear tuned out, but alert when disagrees.	Attentive, receptive; often supportive smile, head nodding, much verbal feedback.	Open, sociable; often a good deal of humor, interplay, quick to agree.	Cool, studious, often hard to read; may be a lack of feedback, as if hearing you out.	Direct, forceful; agreement and disagreement often quickly expressed nonverbally.
Apt to say:	"On the other hand . . ."	"It seems to me . . ."	"I'll buy that . . ."	"It stands to reason . . ."	"It's obvious to me . . ."
	"No, that's not necessarily so . . ."	"Don't you think that . . .?"	"That's sure one way to go . . ."	"If you look at it logically . . ."	"Everybody knows that . . ."
Apt to express:	Concepts, opposite points of view; speculates, may identify absurdities.	Feelings, ideas about values, what's good for people, concerns about goals.	Non-complex ideas; may tell brief personal anecdotes to explain ideas.	General rules; describes things systematically, offers substantiating data.	Opinions; describes factually, may offer short, pointed anecdotes.
Tone:	Sardonic, probing, skeptical; may sound argumentative.	Inquiring, hopeful; may sound tentative or disappointed and resentful.	Enthusiastic, agreeable; may sound insincere.	Dry, disciplined, careful; may sound set, stubborn.	Forthright, positive; may sound dogmatic or domineering.
Enjoys:	Speculative, philosophical, intellectual argument.	Feeling-level discussions about people and their problems.	Brainstorming around tactical issues; lively give-and-take.	Structured, rational examination of substantive issues.	Short, direct, factual discussions of immediate matters.
Apt to use:	Parenthetical expressions, qualifying adjectives and phrases.	Indirect questions, aids to gain agreement.	Case examples, illustrations, popular opinions.	Long, discursive, well-formulated sentences.	Direct, pithy, descriptive statements.
Dislikes:	Talk that seems simplistic, superficially polite, fact-centered, repetitive, "mundane."	Talk that seems too data-bound, factual, "dehumanizing"; and openly conflictual argument unless about issues of caring or integrity.	Talk that seems dry, dull, humorless; or too conceptual, philosophical, analytical, "nit-picking."	Talk that seems irrational, aimless, or too speculative, "far-out"; and irrelevant humor.	Talk that seems too theoretical, sentimental, subjective, impractical, "long-winded."
Under stress:	Pokes fun.	Looks hurt.	Looks bored.	Withdraws.	Gets agitated.
Stereotype:	"Troublemaker"	"Bleeding Heart"	"Politician"	"Great Stone Face"	"Blockhead"

[1] Allen Harrison and Robert M. Bramson, The Art of Thinking (New York: Berkley Books, 1982), pp. 104-105.

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